High-Accuracy Proton Doping of Integrated Hydrogen-Based Processors with Intersecting Helical Beams

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Introduction

As promulgated in the publication of 9 January 2024, intersecting helical beams are ideal for transistor photofabrication wherein transistor formation is prompted by beams which pass through above portions of a cubic processor structure without causing undesired transistor formation in the above layers but wherein transistors indeed form at desired three-dimensional spatial points deep within a cubic substrate.

Revolutionary though it may be, a greater level of performance is made possible by dispensing entirely with semiconductors and using hydrogen both as a circuit-building material and as a transistor material (ibid. 17 June 2024.)

Abstract

Helical beams may offer the solution to the challenge of placing sufficient numbers of protons with sufficient accuracy within a three-dimensional substrate in order to build a processor which meets all of the following criteria: That it be three-dimensional and not require the integration of pre-fabricated two-dimensional layers, that it utilize hydrogen for both transistors and for electrical pathways and that the process be sufficiently accurate and efficient to enable scalable production of such processors.

When doping any electronic component with protons for any reason, a proton accelerator is used in order to fire protons at sufficient velocity toward a component so as to allow it to penetrate above layers and to embed itself within a component. This is promising and yet problematical as the lateral position and, particularly, the depth of the proton placement is extremely difficult to control.

In the publication of 9 January 2024, this author proposed the use of intersecting helical beams in order to prompt the formation of transistors deep within a photoreactive structure. Helical light would not interact with the photoreactive materials but would de-helicize upon interaction with counter-rotating helical light coming from the opposing direction. Point-emissions of non-helicized light coming from those locations would prompt the formation of transistors in those cases, just as though someone had placed an invisible lightbulb at the very point where a transistor was desired, resulting in the formation of a transistor only at the desired location.

I posit that one may, furthermore, be able to use helical beams in the context of non-reactive materials as a guide for protons projected toward a three-

dimensional substrate and that the point of intersection of two counter-rotating helical beams emitted from antipodean positions relative to one-another could serve as a backstop for projected protons, ensuring that they come to rest at the precise desired spatial point.

A proton would be projected directly through the narrow central corridor formed by the beam through which it would be magnetically constrained in its path. This magnetic field would prevent interaction with the magnetic field of atoms of the substrate and would enable protons of lower velocity to more easily penetrate such substrates.

Medical Applications

Proton therapy is used for the radiological treatment of brain cancers and has been demonstrated to be a promising avenue for cancer treatment. A shortcoming of this approach has been the inability to target tumor cells with sufficient precision to entirely eradicate tumor cells and to protect surrounding tissues. Protons passing through human tissue still cause damage to that tissue despite their ability to penetrate that tissue.

The same protons which have often generated lackluster patient outcomes (comparable to gamma therapy) when encased in a sheath of electromagnetic energy in the form of helical light would not interact with human tissues and would cause zero damage to above tissues. The de-helicized light, itself, would also provide a form of feedback which could be used by a sensor to more precisely target tumors and protect healthy brain tissue. It may even be possible that the ability to expose tumor tissue to simple light could aid in the eradication of tumor tissue given that light can have the local effect of stimulating an immune response.

Conclusion

The precision guidance of protons has important applications for computer processing, data storage, data transmission and medicine. Coupling multiple innovative approaches including those which are still experimental has the potential to lead to near-exponential advancement in multiple fields and is an important strategy for the creation of further innovations.